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ABSTRACT

The study was designed to measure language, cognitive, perceptual, and oral-motor abilities in 17 preschoolers referred for speech-language evaluation because of unintelligible speech. Ss were administered a test battery which included tests of hearing, coarticulation, vocabulary, speech sound discrimination, and oral examination of the speech mechanism. Cluster analysis of the test scores defined these groups of children with similar test scores: group 1--severe articulation disorder, poor oral motor coordination (especially of the tongue), average language and above average cognition; group 2--severe articulation disorder, observable muscle weakness, average language and above average cognition; and group 3--the most severe articulation disorder, muscle weakness, language and cognitive deficits. All Ss had oral-motor differences. Findings suggested that it was important to distinguish the child with a motor-speech disorder from the child who has learned incorrect articulation, and the child with a phonological delay or disorder. (CL)

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THREE SUBGROUPS OF PRESCHOOL CHILDREN WITH SPEECH INTELLIGIBILITY DISORDERS

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Numerous researchers have described the cognitive, linguistic, perceptual, and motor characteristics of children who use incorrect articulation. In two studies children with incorrect articulation or phonological disorders were given a battery of psychometric and motor tests, and grouped according to their test performances. In the first study Arndt, Shelton, Johnson and Furr tested 98 school-aged children who incorrectly articulated either /s/ or /r/. Twenty-six of these children had language disorders manifested as deficient reading, spelling, psycholinguistic performance and auditory processing. Eighteen children had significantly different oral structures and the largest group of 54 youngsters had average to superior performance on all tests.

More recently, McNutt and Hamayan (1984) tested 60 school-aged children with incorrect articulation of one phoneme at least 80 percent of the time and 39 children with correct articulation. The children with articulation disorders displayed 12 different diagnostic profiles, ranging from low scores on all tests to average performance on all nonarticulatory tasks. However, the children with incorrect articulation were distinguished from the

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control group by slower diadochokinetic rates and poorer performance of five speech perception-speech comprehension tests.

We can conclude from the results of these studies that school-aged children with incorrect articulation present a variety of diagnostic profiles. However, we do not know whether young children who have multiple articulation errors or phonological disorders can be placed into groups according to similar test performance. The purpose of the present study was to measure language, congitive, perceptual and oral-motor abilities in a group of young preschool children who were referred for speech-language evaluation because of unintelligible speech.

METHOD

SLIDE 1

The children we tested were 12 boys and 5 girls referred to the Arizona State University Speech and Hearing Clinic. The children were from 48 months to 65 months of age with an average of 54 months. Children who had (1) developmental milestones within normal limits, (2) performance I.Q.'s within one standard deviation of the mean, and (3) normal hearing without a history of otitis media were included in the study. Two children who had performance I.Q.'s less than 85 on the Wechsler Preschool and Primary Scale of Intelligence (WIPPSI), and three children who did not pass the hearing screening were excluded from the study.

SLIDE 2

Each child received the same test battery. On the first day there was a parent interview followed by a hearing screening, WIPPSI, Coarticulation Assessment in Meaningful Language (CAML), Assessment of Phonological Processes and a conversation sample.

SLIDE 3

Day two testing consisted of the Expressive One Word Picture Vocabulary Test, Token Test for Children, Peabody Picture Vocabulary Test, Locke procedure for speech sound discrimination, oral examinations of the speech mechanism, and parent conference. The testing took approximately two hours each day.

Testing was completed by a graduate research assistant in the Department of Speech and Hearing Science selected because of her high agreement with the authors in phonetic transcription and test administration.

RESULTS AND DISCUSSION

Cluster analysis of the children's test scores defined three groups of children with similar test scores. There were 11 children in Group I, 5 children in Group II, and 2 children in Group III.

SLIDE 4

Groups I and III had average or above average language and cognitive development while Group II had generally low scores on language and cognitive tests. Specifically Groups I and III had average Peabody Picture Vocabulary Test, Expressive One Word Picture Vocabulary Test, and WIPPSI-V test scores, but Group II scored one to two standard deviations below the test norms.

SLIDE 5

Similarly, the MLU's and syntax of Groups I and III were one standard deviation above the average. Although Group II had average MLU's, their syntax was two standard deviations below the average.

SLIDE 6

Again, Groups I and III had average Token Test Scores and above average WIPPSI-F scale scores. Group II was one standard deviation below the mean for the Token Test and WIPPSI-F.

SLIDE 7

All three groups had high error scores on the CAML. Groups I and II were more than two standard deviations above the CAML norms and Group II was more than 5 standard deviations above the norms.

SLIDE 8

All three groups had oral deviations. Group I children could not coordinate multiple articulatory movements, and were judged to have weak, slow, or inaccurate tongue movements. The most common problem was inability to protrude tongue with force. Their diadochokinetic rates for /pʌ tʌ kʌ / however, were average. Group II also had weak tongue movements so that they either could not protrude their tongues or had slow weak protrusion. Four of these 5 children had observable muscle weakness of oral structures including the lips and uvula. The two children in Group III had left facial weakness with paresis of the tongue and lips.

SLIDE 9

In summary, the profiles of the three groups were:

Group I: Severe articulation disorder, poor oral motor coordination, especially of the tongue, average language and above average cognition.

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Group III: Severe articulation disorder, observable muscle weakness, average language and above average cognition.

SLIDE 11

Group II: The most severe articulation disorder, muscle weakness, language and cognitive deficits.

Perhaps our most interesting finding was that when compared to the oral examination norms reported by Holly, all children we tested had oral-motor differences. Therefore, we can recommend without reservation that children receive complete and thorough oral examinations if they articulate sounds incorrectly.

Further, it is important to distinguish the child who has a motor-speech disorder from the child who has learned incorrect articulation, and the child who has a phonological delay or disorder.

12 BOYS

5 GIRLS

48 to 65 MONTHS

MEAN AGE 54 MONTHS

Slide 1

HEARING SCREENING

WIPPSI

CAML

PHONOLOGICAL ANALYSIS

LANGUAGE SAMPLE

Slide 2

EXPRESSIVE VOCABULARY TEST

TOKEN TEST

PEABODY PICTURE VOCABULARY TEST

LOCKE

ORAL EXAM

PARENT CONFERENCE

Slide 3

LANGUAGE

GROUPS	PPVT	EOWPVT	WIPPSI - V
I	AVERAGE	AVERAGE	AVERAGE
II	-2 S.D.	-1.4 S.D.	-1 S.D.
III	AVERAGE	AVERAGE	AVERAGE

Slide 4

LANGUAGE

GROUPS	MLU	STRUCTURE
I	+1 S.D.	AVERAGE
II	AVERAGE	-2 S.D.
III	+1 S.D.	AVERAGE

Slide 5

GROUPS	MEMORY	WIPPSI - F	LOCKE PERCEPTION
I	AVERAGE	+ 1 S.D.	AVERAGE
II	- 1 S.D.	- 1 S.D.	AVERAGE
III	AVERAGE	+ 1.5 S.D.	AVERAGE

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GROUPS	AGE MONTHS	ARTICULATION CAML	SCORES
I	55	SEVERE	(62)
II	55	SEVERE	(66)
III	49	SEVERE	(76)

Slide 7.

SPEECH MECHANISM

GROUPS	DEVIATIONS	DIADOCHOKINESIS
I	COORDINATION	AVERAGE
II	PARESIS	AVERAGE
III	PARESIS	-1 S.D.

Slide 8

GROUP I PROFILE

SEVERE ARTICULATION DISORDER

ORAL MOTOR INCOORDINATION

AVERAGE LANGUAGE

ABOVE AVERAGE COGNITIVE

Slide 9

GROUP III PROFILE

SEVERE ARTICULATION DISORDER

MUSCLE WEAKNESS

AVERAGE LANGUAGE

ABOVE AVERAGE COGNITION

GROUP II PROFILE

SEVERE ARTICULATION DISORDER

MUSCLE WEAKNESS

LANGUAGE DISORDER

COGNITIVE DELAY

Slide 11

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